

HUBERT OTT and
THOMAS GRAU
U.S. Serial No.: 10/505,354

R E M A R K S

Reconsideration is respectfully requested in view of the Terminal Disclaimer filed concurrently herewith, the amended independent claims and in view of the analysis of the prior art.

Formal Matters

Amendment of the title of the Specification is respectfully requested. Applicants agree a more descriptive title is in order. Applicants respectfully request amendment of the title to -- Electromagnetic Valve with a Radial Ribbed Spacer Guide--.

In reviewing the claims it was noticed dependent claim 13 lacked an antecedent basis and the word "said". Correction of the lack of antecedent basis was made by amending intervening claim 12.

Claims 1, 5-6 and 24-26 were provisionally rejected on the nonstationary obviousness-type double patenting with the indication the rejection would be removed by a terminal disclaimer.

A terminal disclaimer is concurrently filed herewith in

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U.S. Serial No.: 10/505,354

conformity with the Office Action. Removal of this grounds for rejection is respectfully requested.

Prior Art

Applicants appreciate the diligent search and detailed analysis of the prior art. The prior art does not teach or suggest the Applicants' invention as claimed in the amended claims.

Applicants' invention as described in the Specification and now in the amended title pertains to a valve having particularly low noise and low wear characteristics due to its tapered rib configuration for guiding the valve to the valve seat. The Applicants' guide piece unlike the prior art provides a guide for guiding the valve in an axial and radial direction in all positions between switch settings. Applicants' valve is also different from the prior art in utilizing a single control coil to move the valve body between switch settings.

35 U.S.C. § 102 Claim Rejections

Original claims 1-7, 11-13, 16-19 and 23-25 were rejected under 35 U.S.C. § 102(b) as being anticipated by Applicants'

HUBERT OTT and
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U.S. Serial No.: 10/505,354

cited reference of Heintz U.S. 2,983,278.

Heintz '278 is believed the most pertinent prior art as it includes lands 24 (Fig. 2) for guiding the slidably mounted cylindrical magnet 27 between the pair of electromagnetic coils 17 and 18. Unlike the invention Heintz '278 does not utilize a single control coil to open and close the valve (cylindrical magnet 27), nor does Heintz '278 utilize radially tapered ribs for guiding the valve body in an axial and radial direction to the valve seat.

The patentable differences between the Applicants' invention are now included in amended independent claims 1, 24 and 26.

Claims 1-3, 5-6, 10-11, 20 and 23-25 were rejected under 35 U.S.C. § 102(b) as being anticipated by Staiger, et al. 4,336,823 in paragraph 6 of the Office Action.

Staiger, et al. '823 utilizes a spring and a control coil to move the armature 19 to open and close the valve. The invention unlike Staiger, et al. '823 and Heintz '278 employs a single control coil to open and close the valve instead of two coils (Heintz) or a spring and a coil (Staiger, et al.). The novel guide with inwardly tapering ribs for axially and radially guiding the valve body to the valve seat of the invention is also patentably different than Staiger, et al. '823. Moreover neither Heintz '278 nor Staiger, et al. '823 teach or suggest a valve

HUBERT OTT and
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U.S. Serial No.: 10/505,354

body and axial and radial guide for providing a valve having reduced noise low wear characteristics.

Claims 1-3, 5-7, 11, 20-22 and 24-25 were rejected under 35 U.S.C. § 102(b) as being anticipated by Kühl, et al. U.S. Patent 4,511,118 in paragraph 7 of the Office Action.

Kühl '118 like the other prior art discussed does not have a single control coil for radially and axially controlling the movement of the valve body or have inwardly radially tapered ribs to provide positive control over the valve body in the valve chamber. Kühl '118 does not provide a linear radial and axial guide or positive control of the ball 3 in all positions in the valve chamber since the guideway 2 of Kühl '118 has to be greater than or equal to the diameter of the ball 3. Thus when the diameter of ball 3 clears guideway 2 it is no longer radially and axially guided or positively controlled on its way to the seat 7 of Kühl '118.

Applicants' invention as claimed in the independent claims not only has a single control coil but also has radially tapering ribs for controlling the axial and radial position of the valve in all locations in the valve chamber. Kühl '118 like the other prior art does not have a combined guide and valve seat for the positive axial and radial control of the valve element.

HUBERT OTT and
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U.S. Serial No.: 10/505,354

35 U.S.C. § 103 Claim Rejections

In paragraph 9 of the Office Action the Office Action the Examiner is correct in presuming the subject matter of the various claims was commonly owned at the time the claimed subject matter was made.

In paragraphs 10 and 11 of the Office Action claim 8 was rejected as being obvious under 35 U.S.C. § 103 over Heintz '278 in view of McMullen U.S. Patent 4,437,815 or as being obvious under 35 U.S.C. § 103 over Kühl, et al. '118 in view of McMullen '815.

McMullen '815 in combination with either Heintz '278 or Kühl, et al. '118 does not teach or disclose a combined guide and valve seat or the limitations of the base claim. In addition the McMullen '815 patent does not teach or suggest the use of plastic to produce a valve with low noise characteristics and low wear characteristics.

Claim 9 was rejected under 35 U.S.C. § 103 as being obvious over Heintz '278 in view of Tespa U.S. Patent 4,590,962 in paragraph 11 of the Office Action.

Tespa '962 alone or with Heintz '278 does not teach or suggest the novel features of the amended independent base claim of utilizing a combined guide and valve seat to provide the

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U.S. Serial No.: 10/505,354

advantages of the invention. As a result it is believed dependent claim 9 is patentable.

In paragraph 13 of the Office Action claims 14 and 15 were rejected as being unpatentable over Heintz '278 in view of Hunt U.S. Patent 3,828,818.

Hunt '818 alone or with Heintz '278 does not teach or suggest the novel features of the amended independent base claim of utilizing a guide having radially tapered ribs to produce a valve with low noise characteristics and low wear characteristics as opposed to decreased electrical required power. As a result it is believe dependent claims 14 and 15 are patentable.

Claim 26 was rejected under 35 U.S.C. § 103(a) as being obvious and hence unpatentable over Staiger, et al. '823 in view of Hunt '818.

Claim 26 as amended is not obvious over Staiger, et al. '823 in view of Hunt '818. More particularly neither Staiger, et al. '823 nor Hunt '818 teach or suggest employing a radially tapered rib guide to provide positive axial and radial control over the valve body in all locations in the valve chamber to produce a valve with low noise and low wear characteristics. In addition Hunt '818 does not disclose the use of a first and second magnet and a single control coil to operate the valve body in the combined valve body guide and valve seat. As a result it is

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U.S. Serial No.: 10/505,354

believed amended claim 26 is patentable.

The prior art made of record and not relied upon including Blosser, Jr. 3552,437; Bremner, et al. 3,203,447; Heimann 3,809,123 and Masaki, et al. 4,506,701 have also been reviewed and none of the prior art is believed to teach or suggest a guide having radially tapered ribs to positively control the axial and radial position of the valve body in the valve chamber. While Blosser, Jr. '437 has guides the Blosser, Jr. '437 guides like the lands of Heintz '278 are not radially tapered as claimed in the amended independent claims.

Applicants believe all of the claims as amended are now patentable which action is respectfully requested.

Respectfully submitted,

BRENEMAN & GEORGES

By: William D. Breneman
William D. Breneman, Esq.
Reg. No. 26,714

3150 Commonwealth Avenue
Alexandria, Virginia 22305
Tel.: (703) 683-8006
Fax: (703) 683-8009